

The ISO-CART mobile NDA system is an ideal solution to a wide variety of in-situ gamma-ray measurement requirements. The system includes: Three interchangeable high purity germanium detectors (HpGe). Each detector has characteristics that allow it to be deployed in a unique field measurement situation. A high efficiency n-type detector with a beryllium window allows for detection of a wide range of isotopes in environmental and waste/residue measurement conditions. This detector is capable of measuring fission products, activation isotopes, and some transuranic isotopes. The other two detectors are p-type units with high and low efficiencies, respectively. The differences in these two units are by design: they can be deployed to very high or very low background situations at the INEEL and perform accurate measurements under very different conditions. Three interchangeable DART portable multichannel analyzers. These units are small, battery or line powered units which have been shown to perform very well in all types of conditions at the INEEL (e.g. temperature extremes from -20 to +105 deg F, high dust environments, and poor power conditions). A single digital multichannel analyzer/computer (palm size) is being beta tested by INEEL for the vendor. These will replace the DART multichannel analyzer and the laptop Panasonic computer in future field operations. Computer power is provided by three interchangeable Panasonic CF-25 and CF-37 Toughbook field computers. These computers are specially designed to withstand the harsh environmental conditions seen at the INEEL. A multi-attitude wheeled cart (i.e. ISOCART) holds a set of variable shield and collimator units. This cart allows for shielding and collimating of any of the above detector units depending on field measurement conditions. In addition, the detectors can be deployed at various angles and elevations above a surface in order to perform "hot spot" measurements. The software used on this system include the Perkin Elmer Gamma Vision peak fitting code, the U.S. Dept. of Energy M1 In-situ Soil analysis code, and the Perkin Elmer Isotopic analysis code used for unusual object assay and calculation purposes. Trimble Navigation GPS system used to locate measurement points and construct data maps ties the collected field data to Trimble Navigation GPS coordinates and the final output is a two or three dimensional radiation profile map or picture of an area or an object.